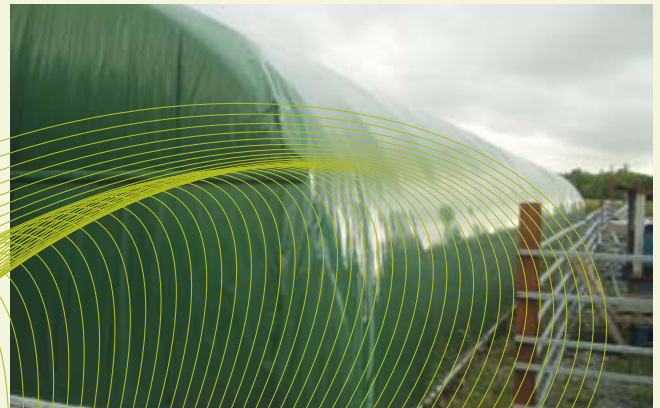


Gardenfield Mushrooms

WOODCHIP BOILER INSTALLATION



Technology: 150 kW woodchip boiler supplying heat for mushroom farm

Location: Gardenfield Mushrooms, Hollymount, Co. Mayo

Results: Savings of 200 tonnes of CO₂ emissions and cost savings of €26,000 per annum

Installation Date: March 2006

Owners Perspective

"On the basis of our successful experience with the system, we have had a steady stream of visitors to the farm to see how it operates. Within a few weeks of installing it, two of my neighbours had installed woodfuel boilers in their houses. All in all, I am very happy with my decision to convert from the oil-fired system. My total outlay was €62,000, which means that the entire project has a payback period of just under two years."

John Fallon, owner Gardenfield Mushrooms

Organisation/Company

Gardenfield Mushrooms was established in 1994 by John and Margaret Fallon. The company, which is located on an 80-acre farm in Hollymount, near Claremorris, Co Mayo, produces approximately 800,000 kg of mushrooms a year which are sold in supermarkets throughout Galway, Sligo and Mayo.

Project Background

The Irish mushroom-growing industry operates on tight profit margins, with overheads such as energy, labour costs, distribution and marketing costs accounting for up to 90% of annual turnover. For this reason, John Fallon, owner of Gardenfield Mushrooms realised that if he was going to stay in business, he would have to achieve significant reductions in his annual operating costs; a switch from oil-fired heating system to a woodchip-fuelled system was one area where he stood to make major cost savings.

Utility	Tunnel space heating
Heating System	2 x 205kW Boiler
Oil Cost	€40,000 per annum

Pre 2006 Figures

The mushrooms are grown in 12 plastic tunnels, where temperatures must be maintained at between 18°C and 20°C at all times. The heating in each tunnel is delivered by a combination of fan-assisted radiators and hot water; the latter is delivered through a 250 m network of gun barrel pipes.

Project Development

In July 2005, John Fallon visited a pig farming operation in Tipperary to investigate how the owner, Jack O'Donnell, was faring as a result of having installed a woodchip fuelled system on his farm. Based on what he learned during his visit, he decided to carry

out a feasibility study on the benefits of installing a similar system in his mushroom-growing operation.

The feasibility study was carried out in August 2005. The study showed that the installation of a woodchip boiler would result in a reduction in the annual heating costs for the farm from €40,000 to €15,000 and reduce annual boiler servicing costs from €1,500 to €500. Based on these projected savings, John Fallon decided to engage Clearpower Ltd. to install a boiler on his farm.

As part of the process of converting to the woodchip system a purpose-built steel shed was installed to store up to 12 weeks supply of woodchips (i.e. about 42,000 kg) at a time. The construction of the 250 m² shed, open to one side to facilitate the desired level of aeration, was completed in two weeks. The building materials for the shed cost just €18,000.

Having decided to undertake as much of the work as he could himself, John Fallon worked alongside the installation company during the construction of the boiler house. Technical specifications that were required were outlined to John Fallon, so that he could ensure that sufficient space was left for the installation of a hopper to feed the boiler, and the installation of a fan assisted flue. The work took two days to complete.

Plant Operation

The installation of the new system was fully complete in March 2006. The 150 kW woodchip boiler acts as lead boiler, taking most of the load with the oil boilers remaining as back up. The fuel supply for the boiler is sourced locally. In normal weather, the boiler uses approximately 500 kg of woodchips a day. When the weather is very cold, consumption runs at about 1,000 kg a day. The woodchip fuel is fed automatically from a hopper (measuring 4 m x 4 m wide and 2 m high). Top ups to the hopper are required every 12-14 days in normal operating conditions. Fuel loads are delivered to the hopper via a fork-lift truck. For logistical reasons, John Fallon chooses to arrange collection of the woodchips from the saw mill, as and when he needs supplies, usually every 10 weeks. One factor that John Fallon has found to be important is that the moisture content of the woodchip fuel is consistent, with a moisture content of 25% working best in his woodchip boiler.

The ash box for the boiler must be emptied once a week and the boiler requires cleaning every three to four weeks. The cleaning process is automatic but requires the boiler to be turned off. This process takes just 2 hours and so does not interfere with production. Professional maintenance of the boiler is carried out once a year at a cost of €500 per visit.

Key Project Developers/Suppliers

Feasibility Study: Clearpower Ltd.

Supplier: Clearpower Ltd.

Mechanical and Electrical

Contractors: Osborne and Co.

Project Contact: John Fallon

Tel: 092 40090

Economic / Environmental benefits

Economic

Capital Investment: €62,000

Woodchip/fuel costs: €15,000 p/year

Maintenance Costs: €500 p/year

Annual Savings: €26,000

SEI Grant: €12,624

Payback Period (with SEI grant): 2 Years

Previous Oil costs: €40,000 p/year

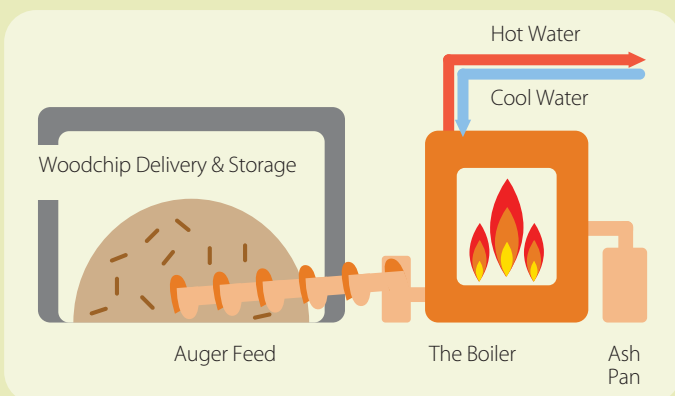
Previous Maintenance Cost: €1,500 p/year

Environment

Fuel Displaced: 724,200 kWh of Oil displaced per year

CO₂ Savings: 200 tonnes per year

Technology Principles



Technology Description

Woodchip/pellet boilers burn woodchips/pellets to produce heat. Modern wood chip or pellet boilers are highly efficient, clean burning and fully automatic.

A woodchip/pellet boiler system usually comprises a number of components: the boiler, fuel handling system, water flow and return systems, the fuel reception and storage systems. Woodchip/pellet delivery can be in bulk or bagged form. Fully automatic systems require a bulk storage area so that there is a continuous supply of fuel. Bulk deliveries are usually made by truck and the fuel is then usually either tipped into a below ground storage area or blown into an above ground storage area. The storage area is specially designed to ensure sufficient ventilation and also incorporates some agitating system, such as a moving floor, to assist in the movement of the fuel to the boiler and to ensure that no chips remain unused. An auger system then moves the chips from the storage area to the boiler feed. The fuel is burned in a high efficiency, specially designed boiler. After the wood is burned, ash is collected. The ash produced is not hazardous and can be used as a fertilizer in the garden.